Mr. Stark; the former adding the termination "formes" to the names of the orders. Here again, although we regard the addition of the termination in question as totally superfluous, and at the same time ugly, we should be quite prepared to sacrifice our personal prejudices for the sake of uniformity.

The descriptive portion of the work appears to be carefully executed, and the "keys" seem to be well drawn up. While quoting from the publications of the numerous field-naturalists who have written on African ornithology, Captain Shelley is by no means dependent altogether on the observations of others for his accounts of the habits of many of the birds he describes, since he himself has twice visited Egypt, and has likewise travelled in Cape Colony and Natal, where he had the advantage of meeting such well-known local ornithologists as the Messrs. Ayres. As a "bird-country" Captain Shelley speaks very enthusiastically of Africa, observing that it "may fairly claim to be the metropolis of the song-birds, for the bush resounds with their melody; it is the winter home of a large proportion of our most attractive small birds, such as the nightingale and the many warblers which enliven our English gardens and surrounding country in summer, as well as the swallow, our well-known harbinger of spring."

Mention has already been made of the beauty of the plates illustrating the second part, and it may be added that the typography and general "get-up" of the work are beyond praise. If the same high standard be maintained in the succeeding issues, the complete work cannot fail of proving highly attractive to all bird-lovers.

R. L.

NOTES.

Prof. W. C. Brögger, of the University of Christiania, the distinguished Norwegian geologist, will deliver the second course of the George Huntington Williams memorial lectures at the Johns Hopkins University during next month. Prof. Brögger is the most prominent Scandinavian geologist, and has published a series of memoirs upon the geology of Southern Norway that have given him rank among the leading investigators of his time. As the Williams lecturer, he follows Sir Archibald Geikie, who opened the lectureship two years ago with a course upon the founders of geology. Prof. Brögger will lecture upon modern deductions regarding the origin of igneous rocks, a subject that has commanded the attention of many geologists in recent years.

The Royal Meteorological Society will attain its jubilee on Tuesday next, April 3, having been founded on April 3, 1850. The celebration of this fiftieth anniversary will be commenced at a commemoration meeting to be held on Tuesday afternoon, when the President, Dr. C. Theodore Williams, will deliver an address, and delegates from other societies will be received. A conversazione will be held at the Royal Institute of Painters in Water Colours in the evening. In addition to the pictures in the galleries, there will also be an exhibition of meteorological instruments, models and photographs, and lantern demonstrations will be given by Colonel H. M. Saunders, Mr. T. C. Porter and Mr. W. Marriott. On Wednesday, April 4, there will be an excursion to the Royal Observatory, Greenwich, and a dinner at the Westminster Palace Hotel. As a memento of the jubilee of the Society, a bronze commemoration medal, bearing on the obverse a portrait of Luke Howard, F.R.S., has been struck.

The New York *Electrical Review* states that the North German Lloyd has decided to equip all its swift steamships with wireless telegraphy apparatus to announce their proximity to the German coast. The *Kaiser Wilhelm der Grosse* has been equipped with the necessary instruments, and a similar outfit has been installed on an island near the mouth of the Ems in the North Sea. The ship will thus be able to exchange signals with the mainland long before she is sighted, or has passed out of view when outward bound. The question of installing wireless telegraphy apparatus on the Nantucket Shoals Lightship, off the Massachusetts coast, is under consideration by the Lighthouse Board. Incoming steamships, similarly equipped, could thus be reported many hours before they could be sighted at Fire Island.

M. Crevat-Durand, who recently died at Fontainebleau, bequeathed to the Pasteur Institute the sum of 100,000 francs.

Dr. Patrick Manson, professor of medical pathology at the English Colonial School of Medicine, has been elected an associate of the Paris Academy of Medicine.

It is stated that Dr. Edward Ehlers, of Copenhagen, is about to proceed to Crete to make arrangements for the segregation of the lepers on the island. There are about 2000 of these, and they will be placed on a small island off the north coast.

The death is announced, at New York, of Dr. Oliver P. Hubbard, formerly professor of chemistry and geology in Dartmouth College, and one of the founders of the American Association for the Advancement of Science.

It is reported that the Lemaire scientific expedition has reached Tenka, after a successful and peaceful journey of 3000 kilometres along the border of the Congo State. Three days east of Lualaba Mission the expedition met Major Gibbons, who was on his way to Tanganyika, *via* Lafoi, and thence to the Nile.

We learn from *Science* that under the direction of Prof. A. A. Wright, of Oberlin College, systematic excavation has been commenced in Brownhelm, Ohio, near Lake Erie, and about twelve miles from Oberlin, to recover mastodon remains, the first of which were discovered several years ago. The jaws and head, both tusks, together with a number of ribs and vertebræ, have been obtained in a good state of preservation.

The Royal Scottish Geographical Society proposes to organise a purely Scottish expedition to the South Pole to work in conjunction with the British and German expeditions. The sphere of the expedition will be the Weddell sea quadrant, south of the Atlantic Ocean, while the British expedition will explore to the south of the Pacific Ocean and the Germans to the south of the Indian Ocean. The leader will be Mr. William S. Bruce, who visited the Antarctic regions in 1892 and 1893.

At the last meeting of the Paris Société d'Encouragement, the president, M. Carnot, referred to the death of Prof. S. Jordan, a member of the council of the society. Prof. Jordan was professor of metallurgy at the École centrale for many years, and was widely known among metallurgists and engineers. He was a member of the Comité des Arts chemiques, and represented more particularly the metallurgy of iron and steel. It was upon his report that the society awarded the Lavoisier medal to M. Osmond in 1897, for his excellent researches on the microstructure of steel.

It was mentioned last week (p 498) that a gentleman had given the Scottish Meteorological Society a donation of 300*l.* to be spent during the next two years in the discussion of the results of the observations made on Ben Nevis and at Fort William since 1881. By the patriotic generosity of Mr. Mackay Bernard, of Dunsinane, whose three donations amount to 1500*l.*, the observations will be carried on to the end of next year. By the 1000*l.* presented by the Royal Societies of London and Edinburgh, the hourly and other observations will be printed *in extenso*, filling three volumes of the *Transactions* of the Royal Society of Edinburgh; and by the gift of 300*l*. just received, the necessary clerical assistants will be engaged to enable Dr. Buchan and Mr. Omond to lay before the scientific world the results of the great experiment in meteorology undertaken by the Directors of the Ben Nevis Observatories in 1881.

THE Society for the Protection of Birds had a year of active work to report upon at the annual meeting held a few days ago. Several new publications were issued during 1899, fifty-nine lectures were delivered, and petitions were sent to various responsible officials and authorities asking for their sympathy and assistance. Steps have been taken to prevent the exportation of Birds of Paradise and others from British New Guinea; the wearing of osprey plumes by the officers of the Hussar and Rifle Regiments, and of the Royal Horse Artillery has been discontinued; and turbans have been substituted for the caps with birds' plumes formerly worn by the body-guard of the Viceroy of India. Orders for the protection of rare birds are in force in many parts of the British Isles, but they are numerous and complicated instead of being few and simple. Efforts are now being made to obtain Parliamentary approval of a Bill designed to simplify and consolidate the present law relating to the protection of wild birds, and practically introducing but one change, viz. to extend protection during a close time to all species and their eggs, leaving it to the various county councils to obtain orders exempting from protection within their administrative areas those species which are destructive or too numerous. Such a law would be far easier to understand and administer than the present intricate and varying regulations.

AN admirable summary of the methods used to preserve food in ancient as well as in modern times was given by Dr. S. Rideal in a paper read before the Society of Arts on March 21, and published in the current number of the Society's *Journal*. There are only a few early allusions to the use of salt, vinegar, and allied substances, to keep food from putrifying, and none of much importance. After either smoking, salting or drying, the characters of fresh food cannot be restored. It was not till the middle of the nineteenth century that it was discovered that small quantities of certain antiseptics would enable the original qualities to be retained, and prevent decay for a considerable period, with less influence on digestion than the old curing processes. Utilising the fact that fermented liquids remain stable for long periods, Bethell, in 1848, patented a process for preserving milk, which consisted in first boiling the milk to expel all the air contained in it, and then saturating with carbon dioxide; when so treated, the liquid remains fresh for a long time after being opened. More recently, compressed oxygen and sterilised air have been tried for preserving milk. Butter, when kept in carbonic acid, at a pressure of six atmospheres, often remains unchanged for four or five weeks. But experiments have shown that carbonic acid, though generally effective for mineral waters, will not of itself prevent changes in milk or meat. Moreover, with regard to the sterilising effect of carbonic acid in mineral waters, Dr. Otto Hehner has examined many such waters and found them swarming with germ life. A great variety of substances containing boric acid are used as preservatives at the present time, especially for the preservation of milk, cream and butter. There is, however, a wide difference of opinion as to the effects of preservatives upon the consumer of the food containing them, and the whole matter is being inquired into by a Departmental Committee.

THOUGH we have as yet no agricultural experiment stations comparable with those of the United States, Canada, and elsewhere, a large amount of valuable work is being done in connection with the agricultural departments of some of our colleges, and by other organisations. Two reports upon work of this kind are before us—one containing the results of experiments made by the agricultural department of the Yorkshire College, Leeds, and the other the *Proceedings* of the Agricultural Research Association, N.B. One of the papers in the former describes the effect of various fertilisers upon the production of meadow hay, which is one of the chief objects of farmers in the West Riding. Among the conclusions arrived at as the result of experiments on clover are:—"Nitragin, a preparation used for inoculating soil with the bacteria that are found in the nodules of clover roots, did not increase the crop."

THE work of the Agricultural Research Association covers a very wide ground. Among the useful results of the investigations carried on under its auspices are the following:—The demonstration that insoluble finely ground mineral phosphate is as effective as soluble phosphate. This led to the use of coprolite and phosphatic slag instead of soluble phosphate, and thereby reduced the cost of phosphate to the farmer; discovery of aperture in root hairs, giving explanation of the absorption into the plant of insoluble matter; determination of the relative values of different forms of nitrogenous, phosphatic and potash manures—leading to economy in the selection of manures for turnip, grain and grass crops; the cause of finger and toe disease in turnips, and means for its prevention. Inquiries on grasses and clovers which indicated the most economical grass mixtures to use, explained the poorness of rye grass pastures and showed the remedy, and led to the suggestion of a ten-year rotation. This rotation is being gradually adopted in practice. The chief subject of investigation at present on hand is an inquiry into the natural cross-fertilisation of oats. Most satisfactory confirmation has been got, during the past season, that an increase is attainable in the yield of the oat crop by means of such natural cross-fertilisation. It now appears that the increase that may be expected by this method is substantial, and it is one which does not involve any outlay. Experiments are now being made to discover the cross which gives the best crop. Several other inquiries are being proceeded with, but they have not reached the stage for being reported upon. We regret to see that certain of these inquiries have had to be stopped for want of funds, but it is hoped that an opportunity may soon arise to admit of their being taken up again.

WE have received from Mr. R. C. Mossman a paper on the price of wheat at Haddington from 1627 to 1897, read before the Scottish Society of Economists. It is a rather laborious compilation, for, although dealing with local wheat prices, it necessarily has to take into consideration many conflicting interests outside the district under discussion. The results are clearly shown in a diagram, in which the mean annual temperature of the air in Edinburgh since 1764 is also given. Previous to this date the observations were non-instrumental, and have been extracted from such works as Lowe's "Natural Phenomena." The relation between temperature and prices during most of the period for which the information is available is clearly seen on looking at the two curves. The most extraordinary prices occurred in 1800 and 1812 (134*s*. 9*d*. per quarter). In the first case heavy rains and a low temperature in August were the chief causes. In the second case the high price was due to the deficiency of the 1811 crop, without the means of obtaining any from abroad. Since 1873, when the price was 64*s*. 8*d*. per quarter, there has been a rapid and almost uninterrupted fall in price, the most potent factor being the great increase in the wheat area of the United States, the lowest figure being 26*s*. 6*d*. in 1894. The rise in 1879 (53*s*. 6*d*.) was due to the unparalleled severity of the weather, and the rise in 1891 (46*s*. 7*d*.), although the wheat harvest of the world was much above the average, was due to a severe and extensive rye famine in Russia, and to the supply in two preceding years being inadequate to meet the demand.

FROM a lengthy "note" on the food supply of the United Kingdom, Belgium, France and Germany, by Mr. R. F. Crawford, published in the *Journal* of the Royal Statistical Society, we learn that the average dietary of an inhabitant of the United Kingdom contains a much larger quantity of meat than that of a Belgian, Frenchman or German, but a smaller proportion of bread and potatoes. In Belgium more bread and less meat are consumed than in any of the other countries named, while in France a noteworthy feature is the apparently small consumption of milk. In the case of potatoes, the consumption per head in Belgium and Germany is about three times that in Great Britain, but the considerable requirements are largely accounted for by their use in the manufacture of starch and spirits.

A FRESHWATER chert from Asia Minor is the text of Mr. W. T. Haydon's presidential address to the Liverpool Microscopical Society, published in the thirty-first annual report of the society. The investigation was based on the examination of some "worked flints" from Hermanjik imported in cargoes of horse beans, which flints were doubtless used as teeth in threshing boards. Thin sections of the flints were remarkably rich in organic remains, chiefly vegetable, including mosses, hepaticæ, pine pollen grains, ferns and grasses; while remains of mollusca, diptera, spiders, &c., were also found. In endeavouring to explain the origin of the silica forming this deposit, an examination was made of some chalk-rock from the same neighbourhood, and this was found to contain great numbers of unmistakable remains of *diatoms*, but all traces of these disappeared in hydrochloric acid. Mr. Haydon's conclusion is that the flint deposits derived their silica from the diatoms, and that the forms of the latter, as represented in the calcareous rocks, were "pseudomorphs" whose silica was replaced by calcite.

A NOTE on the use of formalin as a preventive of silkworm disease is given by Prof. G. Gianoli and Dr. E. Zappa in the *Rendiconti del R. Istituto Lombardo* (xxxiii. 2, 3). From experiments, it appears that the diffusion of formic aldehyde in the form of vapour through the breeding chambers containing the silkworms is not a certain preventive of *Botrytis bassiana*, a fact which the authors attribute in some degree to its high chemical activity, which causes it to be absorbed by various objects, such as the leaves on which the silkworms feed. On the other hand, the presence of this vapour produces a diminution in the weight of the cocoons, and a deterioration in the quality of the silk.

IN the March number of the *Zoologist* Mr. J. H. Gurney gives a plate of one of the so-called "Chestnut Partridges" which have recently excited so much interest in Norfolk. It is stated that a local race of these abnormally coloured birds has now been established; the figured specimen being the twelfth example.—The same number contains the conclusion of Mr. Distant's article on "Mimicry," to which allusion has been previously made in these columns. "The theory of mimicry," writes the author in his concluding paragraph, "is probably the still imperfect recognition of a great truth which is struggling to survive a mass of more or less irrelevant evidence too frequently offered in its support. . . . Whatever view be held, this alone is certain, that the theory in either its demonstrated or suggestive enunciation has been the means of a vast record of facts pertaining to the life-histories of animals and plants which would otherwise have remained either unobserved or disregarded." Can more be demanded in favour of any working hypothesis?

MISS ELEANOR ORMEROD'S Twenty-third Report on Injurious Insects and Common Farm-Pests has just been issued. From this it appears that during 1899, in addition to the ordinary insect infestations, there occurred developments of species which had hitherto been but little noticed. None of the infestations were of a very serious nature, with the exception of the so-called Turnip-Fly, which was very prevalent in some parts of the country. A feature of the year was the marked absence of injury to root-crops by visitations of Caterpillars and Mangold-leaf Fly; while orchard-haunting Caterpillars, as well as those of the Gooseberry and Currant Moth, were likewise conspicuous by their absence. Hessian Fly was recorded from one district; and in this connection the author draws the attention of farmers to the extreme importance of destroying wheat-screenings containing the pupæ of this noxious insect, in the form of the so-called "flax-seeds." A section of the Report is devoted to the Grouse-Fly, which appears to be more interesting to the entomologist than harmful to the prospects of the sportsman, as there is no evidence that it does any appreciable injury to the birds it infests. The remarkable structure of the foot of this insect is illustrated by a tinted plate.

A *Bulletin* of the U.S. Department of Agriculture, by Dr. L. O. Howard, on "Some Results of the Work of the Division of Entomology," bears testimony to the attention bestowed on the mitigation of insect ravages to crops and trees on the other side of the Atlantic. A large portion of this *Bulletin* is devoted to the life-history of two scale-insects of the genus Pulvinaria, which infest maples, and occasionally do much harm to these valuable shade-trees in various parts of the Eastern United States. The second article treats of the insects which (together with the newspapers, as it is significantly remarked) were responsible for the so-called "kissing-bug scare" of the past summer; the account being published mainly to satisfy a shoal of inquirers as to the truth of the newspaper stories. Reports on the devastation caused by locusts in the Western Territories during 1899 are of especial interest at the present time on account of the recent arrival of flights of the true Rocky Mountain Locust (*Melanoplus spretus*) in certain districts of the Northwest. Housekeepers in many parts of the world will be interested to hear of a simple Australian remedy for cockroaches, consisting of a mixture of flour and plaster of Paris, which is greedily eaten by the insects and rapidly sets in their stomachs.

YET another serial dealing, in part, with insect pests is to hand, in the form of the February number of the *Agricultural Gazette of New South Wales*. The contents of this number are varied and interesting, ranging from such subjects as the proper mode of stretching barbed wire and the pruning of plants, to the incubation of eggs and the bacteria found in milk and butter. It is undoubtedly a healthy sign when it is considered advisable to teach poultry-raisers the changes which take place in eggs during incubation; and the excellent figures with which these changes are illustrated, as also those displaying milk and butter bacteria, are worthy of the highest commendation.

M. E. LAURENT has an interesting note, in the *Bulletin* of the Royal Botanical Society of Belgium, on the distribution of the mistletoe in that country. While almost entirely absent from Holland, its distribution in Belgium is local, and appears to have some connection with the nature of the soil, preferring that of a calcareous character. The trees on which it either grows naturally, or has been artificially inoculated, are *Salix viminalis* and *grandiflora* (?), the fig, the olive, *Eucalyptus globulus*, the oleander, the hawthorn, the apple, the pear, the medlar, the quince, and *Malus spectabilis*. On *Ficus elastica*, *Spartium junceum*, and some varieties of the pear, the berries of the mistletoe appeared to produce a poisonous effect. Somewhat similar results as to the influence of the nature of the soil on distribution were obtained with the dodder.

UNDER the title of "The Temple Cyclopædic Primers," Messrs. Dent and Co. have commenced the publication of a series of little volumes on scientific and other subjects. "An Introduction to Science" is written by Dr. Alex Hill; and an "Ethnology" has been translated by Mr. J. H. Loewe from the German of Dr. Michael Haberlandt. The books are both attractive in appearance and instructive in contents; and they should bring a large public in touch with scientific work and thought. Students of science as well as general readers will find the volumes well worthy of consideration.

THE advantages of quartz as a thermometric substance as compared with glass are well known, and since the well-known experiments of Mr. Boys on the behaviour of quartz near its melting point, numerous attempts have been made to produce quartz tubes. M. Dufour, who describes his experiments in the current number of the *Comptes rendus*, has been able to constructs quartz thermometers, two of which are described, one carrying tin as the thermometric liquid, and hence suitable for temperatures from 240° C. upwards. The second instrument contained mercury, and was constructed with the view of comparing its zero residues with those of a glass thermometer.

THE limiting value for the molecular depression of the freezing point in solutions of non-electrolytes, when these solutions become infinitely dilute, is a constant of great importance in the van 't Hoff theory of solution. Raoult, Abegg and Loomis are among the best known workers in this field, and in the current number of the *Zeitschrift für physikalische Chemie* is a contribution by the last named in which the numerous difficulties surrounding the apparently simple operation of taking a freezing point are discussed. The limiting value in extreme dilution for the molecular depression of a considerable number of non-electrolytes of different constitution is the same, 1·86. This is exactly the figure which is obtained from van 't Hoff's well-known formula, if the latent heat of fusion of ice be taken as 79·3 thermal units.

THE additions to the Zoological Society's Gardens during the past week include a Sooty Mangabey (*Cercocebus fuliginosus*, ♀) from West Africa, presented by the Rev. A. Christopher; a Jaguar (*Felis onea*) from Brazil, presented by Mr. Rodriques; two Martinican Doves (*Zenaida aurita*) from the West Indies, presented by Mr. G. R. Phillipps; a Great Bustard (*Otis tarda*, ♂), European, presented by Mr. E. G. B. Meade-Waldo; a Pine Marten (*Mustela martes*) from the Spanish Pyrenees, a Snowy Owl (*Nyctea scandiaca*), European; a Pin-tailed Sand Grouse (*Pterocles alchata*), a Slender-billed Gull (*Larus gelastes*) from Southern Europe, deposited.

OUR ASTRONOMICAL COLUMN

ASTRONOMICAL OCCURRENCES IN APRIL.

April 2. 13h. Venus in conjunction with the moon. Venus 0° 46′ N.
2. 13h. 2m. Jupiter's Sat. IV. in conjunction with N. pole of planet.
3. 8h. 47m. to 9h. 44m. Moon occults B.A.C. 1373 mag. 5·7).
3. Venus 2° S. of the Pleiades.
4. 9h. 30m. to 10h. 22m. Moon occults o Tauri (mag. 4·8).
8. 11h. 46m. to 12h. 45m. Moon occults α Cancri (mag. 4·3).
15. Illuminated portion of disc, Venus = 0·576; Mars, 0·985.
17. 12h. 56m. Minimum of Algol (β Persei).
18. 10h. 36m. to 11h. 42m. Moon occults 24 Ophiuchi (mag. 5·6).
19. 15h. 9m. to 16h. 28m. Moon occults B.A.C. 6088 (mag. 6·0).
20. 9h. 45m. Minimum of Algol (β Persei).
20. 12h. 37m. to 13h. 30m. Moon occults 33 Sagittarii (mag. 6·0).
20. 14h 27m. to 15h. 42m. Moon occults ξ^2 Sagittarii (mag. 3·5).
20. Epoch of the April meteoric shower (Lyrids, radiant 271° + 33°).
20. Saturn. Outer major axis of outer ring, 40″·18.
20. Saturn. Outer minor axis of outer ring, 17″·52.
22. 12h. 12m. to 13h. 49m. Transit of Jupiter's Sat. III.
23. 15h. 23m. to 15h. 57m. Moon occults c^1 Capricornii (mag. 5·2).
24. 14h. 20m. to 15h. 12m. Moon occults κ Aquarii (mag. 5·5).
28. 12h. Venus at greatest elongation, 45° 30′ E
28. Perihelion passage of Giacobini's comet (1900*a*).
29. 15h. 37m. to 17h. 14m. Transit of Jupiter's Sat. III.

COMET 1899 V.—Herr S. K. Winther continues his ephemeris of this comet in the current issue of the *Astronomische Nachrichten* (Bd. 152. No. 3631).

Ephemeris for 12h. Berlin Mean Time.

1900.		R.A. h. m. s.		Decl. ° ′
April 2	...	21 59 40	...	+55 38·0
4	...	22 3 59	...	56 20·9
6	...	8 18	...	57 3·4
8	...	12 40	...	57 45·5
10	...	17 3	...	58 27·2
12	...	22 21 28	...	+59 8·5

NEW SYSTEM OF SPECTRUM PHOTOMETRY.—In the *Astrophysical Journal*, vol. xi. pp. 6–24, January 1900, Prof. D. B. Brace, of Nebraska University, describes a new system of spectral photometric work, the foundation of which depends on a novel method of bringing into juxtaposition the two illuminated areas, the intensities of which are to be compared. This is done by using for the dispersion-piece of the spectro-photometer a compound prism, one-half of which has been silvered along a narrow strip of its face before being cemented to the other. Two collimators are then used, one sending light through the prism in the customary manner, the other so arranged that after internal reflection from the silvered strip and subsequent refraction, the resulting spectrum is received in the same telescope as that from the first source. The two spectra will thus be seen in absolute juxtaposition, and perfect equality will be denoted by the disappearance of the junction line between them. The instrument is stated to be so sensitive that good comparisons could be made on the star Capella, using a 4-inch telescope, so that with larger telescopes the spectra of all the brighter stars could be accurately compared.

VARIABLE STARS OF THE ALGOL TYPE.—In *Popular Astronomy* for March 1900, Mr. H. C. Wilson, of Goodsell Observatory, Minnesota, U.S.A., gives a very complete synopsis of the eclipse theory of the Algol type of variables. In the computations of the possible light curves due to eclipses, formulæ are given for both circular and elliptic orbits, and for direct and oblique line of sight. Using Vogel's values for the radial velocity of the star during the period, there is some little disagreement in the resultant curves, which is too systematic to be put down to errors of observation. Dr. Vogel considering that part of this might be due to the possibly existing atmospheres surrounding the stars having been neglected, Dr. Wilsing calculated anew the resultant light curve, which is so nearly in accordance with the actual one observed as to leave little doubt of the accuracy of the assumption. In this particular Mr. Wilson makes an interesting suggestion with respect to the light curve of the class of variables represented by β Lyræ, showing how, by considering certain values of distance, intensity, and extent of atmosphere of two bodies, a curve of light variation may be found very closely agreeing with that deduced spectroscopically.

COMPUTATION OF ORBITS OF SPECTROSCOPIC DOUBLES.—Dr. K. Schwarzschild, of Munich, contributes to the *Astrono-*